SYNOPSIS

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1 Introduction

Production from capture fisheries has recorded a declining growth trend all over the world in recent times. This trend can be observed in fish production in India and Kerala also. Despite the mechanisation of fishing techniques catch per unit effort declined and unit cost of production increased. The basic reason for the declining growth rate in fish production is the overexploitation of available fish resources. Decline in fish production compelled major fish producers of the world to shift emphasis from development of capture fisheries to development of culture fisheries. Scientific aquaculture – a biotechnology to boost fish production through fish culture – has become popular in major fish producing countries of the world. Aquaculture has emerged as one of the fastest growing food production activity in the world.

In India also aquaculture recorded rapid progress since 1980s. India has very vast resource potential for the development of aquaculture. Substantial growth in culture fisheries and the vast potential available give all inland fisheries development programmes an orientation towards aquaculture.

Kerala too is endowed with abundant resources for the development of aquaculture. The total extent of inland water areas in Kerala is estimated to be of the order of 3, 60,535 ha. Of this the brackish water sprawl over 2, 42,600 ha and fresh water areas amount to 1, 17,935 ha. Of this potential only a small proportion is being utilised now. Fish culture, which was a traditional activity, has grown into a high-value activity practised not only by small and marginal farmers but also by commercial entrepreneurs. The change is more visible in the case of coastal aquaculture, where shrimp culture constituted the major component both in terms of area under culture and value of output.

The development aquaculture was facilitated by the progress in the field of biotechnology in formulating commercially viable and feasible technological models of fish/shrimp culture. It was supported by institutional, technological and financial assistance from international organizations like the World Bank, Food and Agriculture Organization of the UN, National and State Governments, various Research Institutions and Universities in the country etc. Highly lucrative and vast domestic and international market attracted the flow of capital into the sector from outside. Enhancement of food security, creation of employment opportunities, generation of income and surplus for trade in fish and fishery products were the declared objectives of promotion of aquaculture.

2 Statement of the Problem

As against capture fisheries, which involves fish hunting in wild water bodies, in aquaculture fish is cultured and harvested in artificially created water bodies or in natural water logged areas converted in to farms. The field of production has shifted from common property resource to private landed property. Investment in aquaculture was taken up by a group of entrepreneurs from non-fisheries, non-agriculture communities as a profitable avenue of investment for their surplus funds. Development of aquaculture marks the beginning of commercialization of inland fisheries in Kerala.

Under aquaculture, the culture side of the production process gains importance and harvesting becomes less significant. Fish culture reduces the uncertainty in production also. The output consists of only preferred species, which enjoy high demand in world markets. All these enhanced the returns from aquaculture.

But development aquaculture has increased the competition for natural resources (land and water) that supported livelihood activities and employment of many traditional users. On many occasions development of commercial aquaculture is said to cause deprivation of traditional communities from their means of livelihood and their marginalization and became the basis of social tensions and conflicts.

Aquaculture interacts with environment. Unplanned and unregulated growth in aquaculture has many implications that often lead to the degradation or depletion of environmental resources, jeopardizing the livelihood activities of many.

The present study is an attempt to examine the course of development of aqua farming in Kerala and the various socio-economic aspects of changes in culture practises. Though a lot of research work has been done about the biological aspects of fish/shrimp farming, very little attention has been paid to its socio-economic aspects. The focus of the present study would therefore be to fill this lacuna, and to throw more light on the socio economic aspects of development of aquaculture in Kerala.

The aquaculture scenario in the state is dominated by shrimp culture in coastal areas of the state, in terms of area under cultivation, output and employment generation. Shrimp is the main stay of marine products exports from the country and makes significant contribution to the foreign exchange earnings. Shrimp culture is an age old activity and during 1990s, it has recorded rapid progress in the state, compared to other components of aquaculture. Therefore development of shrimp culture is studied in order to assess the socio-economic aspects of aquaculture in the state.

3 Objectives of the study:

The specific objectives of the study are the following.

1) To examine the course of development of aquaculture in Kerala. The emphasis is on the shift from capture fisheries to culture fisheries and the transition from traditional methods to modern practices.

2) To analyse the organisation of production and production relations under aquaculture.

3) To analyse the economics of fish production under aquaculture and its profitability.

4) To study the pattern of employment generation and income distribution under aquaculture.

5) To examine the social aspects of the development in aquaculture.

4 Hypotheses

The study hypothesizes the following:

1) Development of aquaculture involves a shift in emphasis from traditional capture fisheries to modern culture fisheries.

2) Development of aquaculture benefits the economy in terms of output; export earnings, employment and income generation.

3) But the development is lopsided in the sense that the traditional fisher folk and layman are not benefited in terms employment and availability of fish.

5 Universe

The universe of the present study is the shrimp farmers registered with the Agency for the Development of Aquaculture in Kerala, Regional Office Ernakulam, which has jurisdiction over Trissur, Ernakulam and Alapuzha Districts in Kerala.

6 Sample Size

For the sample survey, Trissur, Ernakulam and Alapuzha districts, which account for more than 85 per cent of total area under shrimp culture in the State, are taken as the sample area. From the of list farmers registered with ADAK, Ernakulam, in the year 2008-09, a sample of twenty five percent was selected. Total number of shrimp farmers included in the sample size was sixty three.

7 Sampling Technique

The sample was selected applying the technique of stratified sampling. Farmers were divided into three groups on the basis of size of the farm and from each stratum twenty five percent farmers were selected at random.

8 Tools for Data Collection

The primary data was collected from shrimp farmers included in the sample on the basis of a structured questionnaire. Personal interviews and discussions, with various stake holders in shrimp farming, were conducted to elicit information on various quantitative and qualitative aspects of development of shrimp culture in the state.

Secondary data was collected from various sources. Main sources of secondary data were FAO, MPEDA, Fisheries Dept of Government of Kerala, Books, Journals and other published sources.

9 Treatment of the Data

After collection, the data was properly classified, processed, tabulated analysed and presented with the help of statistical techniques like averages, percentages, correlation analysis, pie diagrams, bar diagram etc.

10 Plan of the Study

The study is arranged in eight chapters. A brief description of the content of each chapter is given below:

Chapter – I

The first chapter introduces the topic of research and presents the research problem, objectives of the study, hypotheses and methods used for collection of data. It also describes the methodology of research and statistical techniques used for the analysis and presentation of data.

Chapter – II

The second chapter presents a review of existing literature on the topic and related areas, based on scholarly works of various researchers. The available literature is arranged in three groups: literature with international perspective, national perspective and regional perspective and are presented in chronological order.

Chapter – III

The third chapter gives a detailed account of aquaculture systems and the course of development of different aquaculture systems in the state, with special emphasis on the development of shrimp farming. The transition from traditional shrimp filtration to the modified extensive method is the focus of the study.

Chapter – IV

The fourth chapter presents the nature of organization of production under different shrimp culture systems practiced in the State. In this chapter an attempt is made to make clear the economic and social implications of the transition from traditional shrimp filtration to modern shrimp culture.

Chapter – V

The fifth chapter deals with the generation of employment and wage income in shrimp farming. A comparative analysis of employment and wage income under the two systems of shrimp culture is attempted with the objective to work out the change in the pattern of employment and wage income and the social implications there of. The analysis is based on the quantitative data collected from the sample survey.

Chapter – VI

The sixth chapter analyzes the economic viability of shrimp farming in terms of profitability. A comparative analysis of profitability of shrimp farming under traditional and scientific methods is presented. The chapter is based on the micro level study conducted by the researcher.

Chapter – VII

The seventh chapter concentrates on the social and ecological aspects of shrimp farming in the state. This chapter is based on quantitative information collected by conducting the sample survey as well as information collected from secondary sources, personal discussion, interviews and observations made by the researcher.

Chapter – VIII

The eighth chapter summarises the study and presents important findings along with conclusion and suggestions to make shrimp farming more sustainable.

11 Major Findings

11.1 Shrimp farming is an agro- business undertaken mainly by an exogenous group of entrepreneurs belonging to non-farm, non-fisheries communities.

11.2 Shrimp farming under the modified system is more capital intensive than the traditional system.

11.3 Under the modified system larger proportion of capital investment is utilized for pond preparation and management than under the traditional system.

11.4 The yield from shrimp culture is of a heterogeneous nature, consisting of different species of shrimp and fishes, while the yield from the modified system, in most cases, consists of only a single, high valued species of tiger shrimp or white shrimp.

11.5 Modified system is more productive than the traditional system in terms of value of yield per hectare

11.6 Tiger shrimp and white shrimp produced under both systems enjoy export markets, while other shrimps and fish produced under the traditional system is sold in local markets.

11.7 Modified system is more labour intensive than the traditional system. Employment of labour per hectare of labour is greater under the modified system than under traditional shrimp farming.

11.8 Pattern of employment under the modified system is different from that under the traditional system. Under the modified system, there was a sharp increase in the proportion of labour employed for pond management and a sharp decline in the proportion of labour employed for harvesting operations.

11.9 Wage income per hector is higher under the modified system. Wage income generated under the modified system is 1.4 times higher than that under the traditional system.

11.10 Of all categories of employment, labour for harvest operations get the highest wage rate and labour for pond management is paid the lowest wage rate.

11.11 The effective wage rate under the modified system is less than that under the traditional system. This is because of the predominance of low-paid pond management operations in total employment under the modified system. In the traditional system, high-paid harvesting operations provide the major part of total employment.

11.12 The relative share of wage income in total revenue is less under the modified system than under the traditional system.

11.13 The modified system is far more profitable than the traditional system, in terms of both profit per hectare and profit per unit (Kilogram) of production.

11.14 However, the relative share of profits in total revenue is less under the modified system, than under the traditional system.

11.15 Conversion of paddy fields into shrimp ponds under the modified system has led to the deprivation of farmers and agricultural workers from their livelihood activities and also the denial of fishing rights on paddy fields at the expiry of shrimp filtration contracts.

11.16 Shrimp farming instead of enhancing food security of local population, added to their food insecurity.

12 Limitations of the study

Even though many studies were conducted on the scientific aspects of aquaculture, its socio-economic aspects are relatively less studied and quantified. Shortage in the availability of secondary data with regard to total production under aquaculture and its contribution to the State domestic product, employment generation etc seriously constrained the study.

Shrimp culture is an age old activity operating in the informal sector. This made definition of population and sample size difficult, forcing the investigator to limit the population to shrimp farmers registered with ADAK, the major agency in the State working for the development of aquaculture in the State.

On many occasions shrimp farmers were reluctant to reveal information on yield and income. Generally they showed a tendency to exaggerate the cost of farming and to under report the revenue. In such situations the researcher has to apply his own judgements, based on other related information, to arrive at reasonable estimates.

13 Policy Implications

Adoption of scientific methods in aquaculture confers many economic benefits on the society in the form of employment and income generation, production of food and trade surplus, foreign exchange earnings etc. But the introduction of the new production process gives rise to changes in the pattern of production, employment, income distribution and livelihood activities, with serious social and economic implications. The study suggests policy measures that can be adopted to lessen the negative social and economic impacts of adoption of new technology in shrimp farming. It is suggested that shrimp farming should be given a marked zone in the master plan for the development of coastal area of the State. In the area earmarked for

shrimp farming, planned development of organic shrimp farming should be promoted. Preparation of the master plan, on the basis of regional plans designed with a participatory approach and its implementation and enforcement shall ensure a balanced development of shrimp culture in harmony with traditional livelihood activities and non-traditional high-value activities.

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